

TWO MONTHS IN THE SOUTHERN CATSKILLS

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During the summer of 1914, the writer spent ten days at Woodland, New York, as the guest of Mr. H. W. Little, the director of "Camp Wake Robin," one of the oldest and best known of the boys' camps in the East. Much of the time was spent in getting acquainted with the flora of the region. This year (1917) he accepted the position as councilor and director of nature study in the camp and spent from June 30 to August 30 there. Although some attention was given to birds and insects, yet ample time was available for a further study of the flora.

The writer was not the first Torreyite to collect and study in this region. We find in the register of the Roxmor hotel at Woodland a record of a field meeting of the Torrey Botanical Club, June 2, 1901. Members who stopped at the hotel were Fanny A. Mulford, Heloise G. Esterly, N. L. Britton, Mrs. Britton, Anna Murray Vail, Alexandrina Taylor, E. P. Bicknell, and C. L. Pollard. It is not often that so many distinguished botanists attend a field meeting of the Torrey or any other botanical club. Mr. Edward Miller, the proprietor of the hotel at Woodland, is a former member of the Torrey Club and took much interest in our botanical work. Mr. Bicknell must be very familiar with the region, for it was in 1880, on Slide Mountain, that he discovered the thrush that bears his name. To me it was a great pleasure while camping on Slide Mountain to listen to the fine flute-like strains of this bird.

Woodland is situated in Ulster County, about four miles south of Phoenicia, in the heart of the southern Catskills. It has an altitude of about 1,000 feet. Many of the highest peaks are in full view. In the narrow valley flows Woodland Brook, one of the finest and most beautiful of all the streams in the Catskill region. The eminent naturalist, John Burroughs, on returning from a

trip to the summit of Wittenberg, remarked: "The trail to which we had committed ourselves led us down into Woodland valley, a retreat which so took my eye by its fine trout brook, its superb mountain scenery and its sweet seclusion, that I marked it for my own." Elsewhere, Mr. Burroughs speaks of this immediate locality: "Of all the retreats I have found amid the Catskills, there is no other that possesses quite so many charms for me as this valley; it is so wild, so quiet, and has such superb mountain views."

The rocks of the region are practically all of sandstone of the Devonian period. The tops of the mountains are capped with a coarse conglomerate which apparently disintegrates easily; thus the soil, as a general thing, is sandy or gravelly. Loose stones abound almost everywhere, either the result of glacial action or of weathering. The mountains are steeper and rougher and the valleys narrower and deeper than they are in the northern Catskills.

Every week we took a hike with the camp boys to some interesting locality. We spent on each trip from one to three days. The region around Woodland for a radius of nearly ten miles was fairly well covered. Among the mountains visited were Terrace, Wittenberg, Cornell, Slide, The Giant's Ledge, Cross Mountain, and Mt. Pleasant. We also collected plants about Winnesook, along the Panther Kill, at Diamond Notch, in the West Kill Valley, at the Broad Hollow Notch, and about Shandakin. Slide Mountain is the highest peak of the Catskills and we found it a most interesting region botanically.

Almost the entire area is covered with forests. Years ago, some of the best timber was cut away and a surprising waste in wood took place. Hemlock trees by the thousands were felled for the bark, which is extensively used for tanning, and the logs were allowed to decay on the ground. This was probably the most abundant tree of the neighborhood, now it is scarcely common. It was about the time of the Civil War that the greatest destruction of this tree occurred. Where trees were cut for lumber, very wasteful methods were used. Sometimes, as on Cornell Mountain, one may find a virgin forest of rare beauty. It is always a delight these days to find such a forest in the East. All

the higher mountains of this region are in the State Forest Reserve. This reservation includes practically everything above an altitude of 1,500 feet.

About forty-five species of native trees were found. Undoubtedly the most abundant tree of the neighborhood is the yellow birch, *Betula lutea*. To a great extent it is taking the place of the hemlock. In some localities one sees scarcely anything else. A few beautiful specimens of the paper birch were observed. Their chalky whiteness could be seen from afar. The sweet or black birch, *Betula lenta*, is common. In July, when the American chestnut was in bloom, many fine trees were seen about Woodland. This tree extended up the mountain side to an altitude of about 1,500 feet. The chestnut-tree blight, so destructive in many localities, reached that part of the Catskills this year for the first time. During the latter part of August, its ravages could be plainly seen.

Oaks are scarce in that locality. A few good trees of the red oak were observed in the vicinity of Woodland. The black oak is the only other *Quercus* that we came across. Hickories are also rather scarce, only a few trees being found. Among the more common trees growing there are the American beech, American hornbeam (*Carpinus caroliniana*), American aspen (*Populus tremuloides*), large-toothed aspen (*Populus grandidentata*), American linden, white ash, sugar maple, mountain maple, red maple, witch hazel, American elm, and slippery elm. The serviceberry (*Amelanchier canadensis*) is quite common and has finer fruits than it has in any other locality where I have found it. A few fine specimens of the butternut (*Juglans cinerea*) are growing in the lowlands about Woodland. At an altitude of about 2,000 feet, the striped or goosefoot maple is quite common. Some of the trees are forty feet high with trunk diameters of six to eight inches.

The white pine is a common tree about Woodland and Phoenicia. Many of the smaller trees are attacked by the white-pine weevil, *Pissodes Strobi* Peck. The attack in almost every case is made on the central axis about three feet from the top, causing it to die. We found no evidence of the white-pine blister rust.

On the summits of the mountains, evergreens predominate. On Wittenberg and Slide mountains, the balsam fir (*Abies balsamea*) is the chief tree. Near the summit of the former mountain are almost impenetrable forests of this tree. On Wittenberg are also to be found the black spruce and a few small trees of the red spruce. Cornell Mountain, which is one of the highest peaks of the Catskills, reaching an elevation of 3,900 feet, has its top and west side covered with a heavy virgin forest of red spruce (*Picea rubra*). Viewed from the summit of Slide Mountain, this beautiful forest appears to cover several square miles. Scarcely any other species grow in this area and its boundaries are very definite. It is almost inaccessible to the lumbermen. The trees are tall and straight, many of them attaining a diameter of two feet or more.

The mountain ash is a common tree on Slide and some of the other mountains. This year its large fruit-clusters were well developed. Judging from the variation in the leaves, both *Sorbus americana* and *Sorbus sambucifolia* probably exist in this locality. This will be a question for further investigation.

Thirty species of ferns were collected. The most abundant were the hay-scented fern, *Dennstaedtia punctilobula*, and the spinulose shield-fern, *Dryopteris spinulosa*. A coarse variety of the latter fern is found near the summit of Slide Mountain. The intermediate variety is especially abundant along the northeast base of Slide, where it grows with *Lycopodium lucidulum*. The two often nearly cover the ground. Nowhere else in the country have we found this club moss so plentiful. Among the rarer ferns observed were *Botrychium lanceolatum*, *Camptosorus rhizophyllus*, *Matteuccia Struthiopteris* (of which only one station is known in the locality we studied), and *Dryopteris Braunii*. The last-named fern was of especial interest to us, for the specimens were the first we had seen outside of the herbarium. We first found it on the east side of Mount Pleasant, where it was growing with *Dryopteris Goldieana*. We afterward found many plants of it growing along the trail to Wittenberg at an altitude of about 1,500 feet. It is graceful, distinct, and certainly one of the most beautiful of all our eastern species.

Inasmuch as nine tenths of the region studied is covered

with woodland, weeds and foreign plants generally are not plentiful. However, two of these are especially abundant. One is *Echium vulgare*, commonly known as blueweed or viper's bugloss. Its bright blue flowers were conspicuous all along the roadside from Phoenicia to Woodland. The other plant referred to is *Origanum vulgare* or wild marjoram, also a native of Europe. It grows in great abundance in almost all the cleared or waste land about Woodland, often so plentiful as to exclude other plant life. As it grew everywhere about the hotel, its purple bracts, conspicuous blossoms and strong mint odor brought forth many inquiries concerning it.

It is always interesting to note the succession of plants and trees as one ascends a mountain. This we especially observed in going to the summits of Wittenberg, Cornell, and Slide. The trail to Wittenberg first leads up the northeast side of Terrace Mountain, which is covered with a dense forest, in which the most abundant tree is yellow birch. The chestnut, beech, and other trees of low elevation are soon left behind. The shrub most common is hobble-bush, *Viburnum alnifolium*. It seems rather strange to find this plant in such abundance, for one rarely sees it fruit in these dense woodlands. At about 1,800 feet *Acer pennsylvanicum* appears. The dry glaciated top of Terrace is reached at an altitude of 2,300 feet. Here amid the rocks and boulders, the blueberries of two or three species grow in great abundance. There are also a few small scattered trees of balsam fir and black spruce. The mountain ash also appears for the first time. Probably the most conspicuous plant on Terrace is *Clintonia borealis*. It grew everywhere along the trail, about the rocks and in fact in any place where it could get a chance to grow. What a pity its large blue berries are not edible, for gallons of them could have been gathered. *Clintonia umbellulata*, which is common in Woodland valley, is also occasionally found here.

As we leave Terrace to continue the trail to the summit of Wittenberg, we begin to find *Trillium undulatum*, with its bright red berries filled with seeds. This plant is most numerous at an altitude of about 2,500 feet. At 3,000 feet the ground hemlock or American yew, *Taxus minor*, becomes plentiful. This small

conifer sometimes nearly covers the ground. We next came across the creeping snowberry, *Chiogenes hispidula*, with its snow-white berries and strong odor of wintergreen. Deciduous trees are getting fewer, while the fir and the spruce are becoming more abundant. From 3,000 to 3,700 feet the mountain is steep and the trail is difficult to follow. Soft moss generally covers the ground and often the trunks and branches of the fir trees are covered with moss to their very tops. The sun shines but a few hours a day on this, the north side of the mountain. Nowhere else have we seen the common polypody fern grow in such perfection as on Wittenberg and Cornell mountains.

Probably the most conspicuous plant on the summit of Wittenberg, which has an elevation of about 3,900 feet, is *Aralia hispida*. Most of the plants had just finished blooming and small green berries were forming. On the morning of that same day, August 25, we found a cluster of these plants in Woodland valley, where the berries were dark purple, ripe, and many of them had either fallen off or had been eaten by the birds. This plant looks much more like an umbellifer than do the other species of the genus and the immature plant is apt to be mistaken for one. On the very summit of Wittenberg, the most interesting shrub to us is *Ilicioides mucronata* or mountain holly. Heretofore we have seen this shrub only in mountain swamps, and were surprised to find it on the dry summit of Wittenberg. Growing in the open, the shrub developed a fine globular form with somewhat pendent branches containing numerous red berries. It would be a splendid thing in cultivation if it could be induced to grow on moderately dry soil.

We spent the night on Wittenberg and had the great pleasure of seeing the aurora borealis as it is generally pictured in books. Great luminous streams flared up in the northern sky extending well toward the zenith. They were ever changing yet always beautiful. The phenomena lasted for nearly an hour. From Wittenberg, we went to the summit of Cornell which is just a little less than 4,000 feet in altitude. This mountain is covered with trees. We went down the west side of Cornell through this beautiful virgin forest of red spruce, crossed a flat strewn with boulders and at an elevation of probably 3,000 feet began to ascend the eastern slope of Slide. Here against the sunny incline,

the wild red raspberry, *Rubus strigosus*, grows with much larger stalks and finer, larger berries than in Woodland valley, where it is so plentiful. The eastern slope of Slide is very steep and difficult to climb, but we finally reached the summit. This is the highest of all the Catskill range, with an altitude of about 4,250 feet. The trees are mostly balsam fir. On the very highest part of Slide, the ground is often entirely covered with *Cornus canadensis*, the dwarf cornel or bunchberry. Its beautiful green leaves bedecked with bunches of bright red berries made one of the most pleasing botanical sights we have ever witnessed.

It is surprising how many bog plants and plants that grow in cool, damp places are to be found on the dry summits of these mountains. The probable causes are that there is more precipitation on mountain tops, that it is cooler, the warm season is shorter, and evaporation is less, so that during the greater part of the year the soil is quite moist.

I have presented but a few of the botanical conditions of this interesting region and hope that the future will give opportunity for a more exhaustive study.